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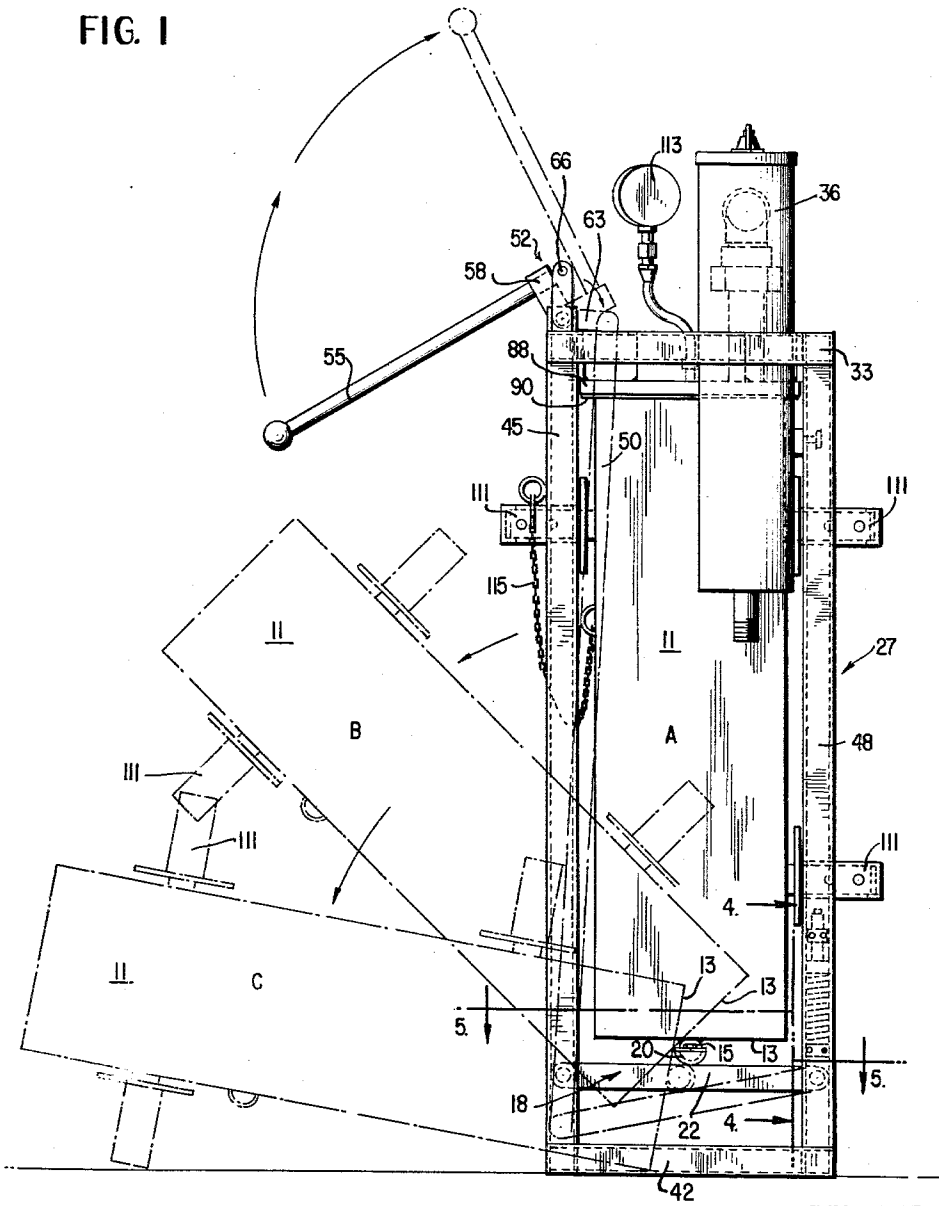
3,195,986

RESILIENTLY MOUNTED CANDLE BURNER

Filed June 6, 1963

2 Sheets-Sheet 1

FIG. 1



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FIG. 2

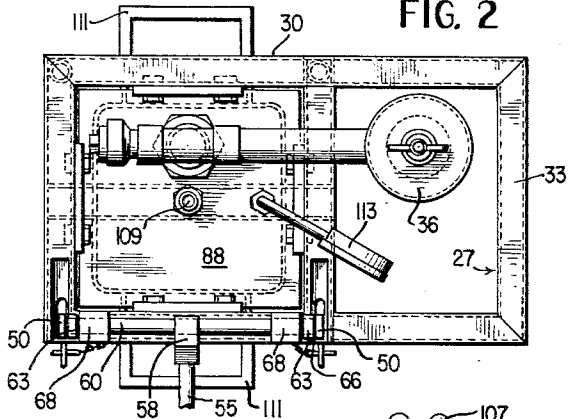


FIG. 4

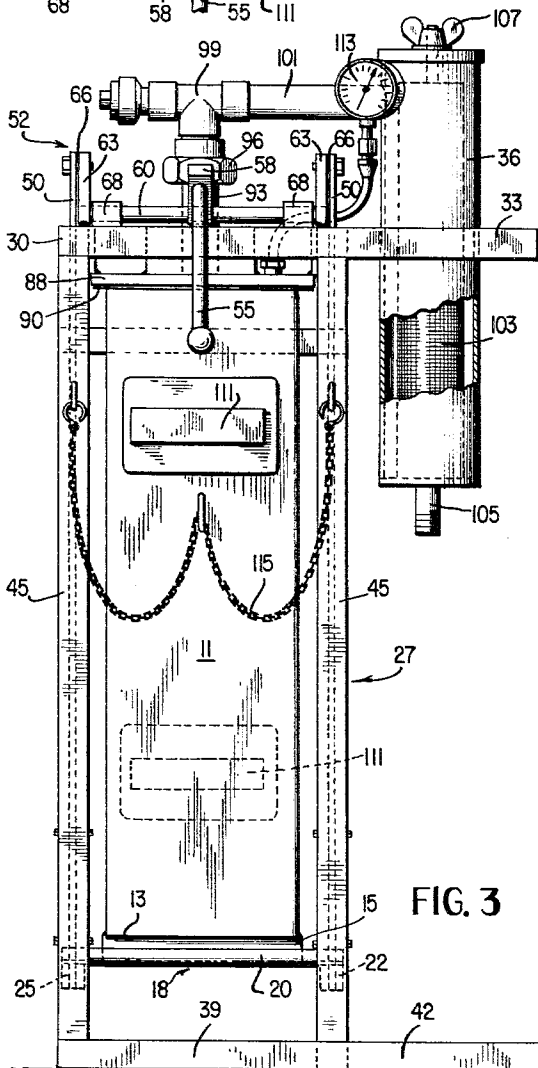
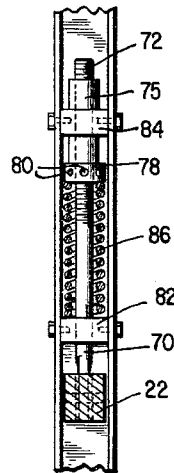
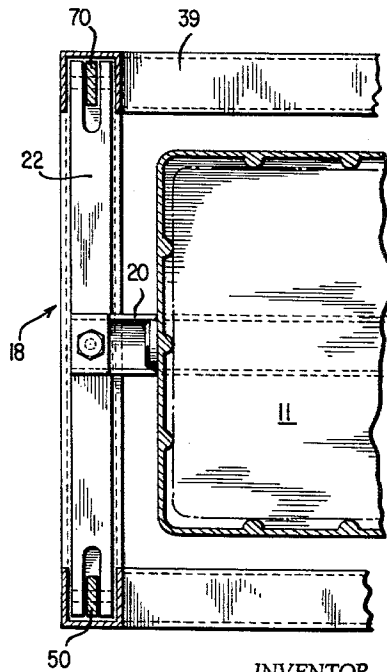


FIG. 5



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RESILIENTLY MOUNTED CANDLE BURNER

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2 Claims. (Cl. 23—231)

This invention is a novel candle burner apparatus for holding a candle and recovering gaseous products from the candle for delivery to a remote point of use. The candle holder is of special utility in the burning of a sodium chlorate candle to produce oxygen; such candles are of value in providing oxygen in confined spaces such as submarines and underground compartments in times of emergency.

A number of limitations and deficiencies have appeared in prior art apparatus designed for this or similar purposes. The apparatus of U.S. Patent 2,983,588 sets out to cure a number of these deficiencies, but it has been found that the patented apparatus requires an extensive period of time for replacement of a candle and reassembly of the apparatus, to a great extent because of the need to balance out the pressures created by the four springs which hold the combustion chamber closed. In this invention a resilient mounting is provided for the combustion canister by the use of only two springs. Also, in this invention a rigid mounting of the oxygen withdrawal mechanism provides for elimination of the flexible tubing required in the previous device, thereby decreasing the cost of the device while increasing the ruggedness.

In this invention the candle-holding canister is mounted resiliently in a frame, the canister being supported by a brace which pivots on spring biased rods. The brace is placed some distance above the bottom of the frame. The side of the brace opposite the pivot is adjustably supported by rods which connect to a lever mechanism generally near the top of the frame. By operation of the lever mechanism the canister can be raised or lowered enough to allow the top of the canister to be swung out of the frame into an inclined position to receive a sodium chlorate or other candle, or into a lower inclined position to permit a candle to slide out of the can.

A cover for the can is rigidly mounted at the top of the frame. Extending through the cover is an opening connected with an oxygen or other product gas outlet conduit. One or more filters usually are supported by the frame and the product gas outlet conduit may pass to this filter arrangement. The cover also is provided with a hole for insertion of igniting means within the closed can. This means preferably includes a rod that may be slidably and rotatably mounted in the hole and has a phosphorus or other pyrogenic coating at its lower end.

The invention will be better understood by reference to the accompanying drawings, in which

FIGURE 1 is a side elevational view of the candle holder showing the canister in position A, the operating position, and, in phantom lines, the canister in position B, the refill position, and position C, the dump position;

FIGURE 2 is a top view of the device;

FIGURE 3 is a front view, with the filter housing partly cut away;

FIGURE 4 is a detail along the line 4—4 of FIGURE 1; and

FIGURE 5 is a cross-sectional view along the line 5—5 of FIGURE 1.

In the drawings, the canister 11 is shown as having a square cross-section, but the canister may be of cylindrical

cal or any other desired elongated shape. The canister may contain means, not shown, for upright positioning of the candle to be inserted therein. The cylinder is usually made of metal, lined with refractory material, if desired, or otherwise made of materials suitable for withstanding the heat and pressures involved in operating. Welded or otherwise fastened to the bottom 13 of the canister 11 is a swing means, for example the rod 15, which is cradled by the brace, indicated generally as 18. The brace 18 suitably comprises a cross-member 20 which, in the preferred embodiment shown, is a trough, supported at the mid-points of side members 22 and 25.

The brace and the canister are held within the frame, indicated generally as 27. The frame preferably is constructed of U-shaped channel stock, providing a more or less square top frame 30 which may be extended somewhat to provide a protective enclosure 33 for the filter housing 36. The bottom frame 39 may be extended to provide the stabilizing member 42. The frame is provided with front legs 45 and with rear legs 48. Within each two front legs 45 are the rods 50. At their upper ends, these rods are attached to the lever mechanism indicated generally as 52. This mechanism may be constructed of elements well known to the art. As illustrated, the lever mechanism comprises the lever rod 55 connected by means of the block 58 to the yoke rod 60 which, in turn has, at either end, a rigid link 63, each of which supports a rod 50 by means of pin 66. The yoke rod 60 is supported by the sleeves 68 fastened to the front of top brace 30. At their lower ends, the rods 50 support the front ends of side members 22 and 25 of the brace 18.

The rear ends of side members 22 and 25 are fastened, for example, by means of pins, to the lower ends of bolts 70, the opposite ends 72 of which are threadedly engaged with internally threaded sleeves 75. Each of these sleeves has the lower enlarged portion 78 which is provided with the holes 80 for insertion of a tool for rotating the sleeve, thereby raising or lowering the bolt 70 and the side members 22 and 25 of the brace 18. The lower end of bolt 70 is journaled within the lower guide 82 and the sleeve 75 is journaled within the upper guide 84. The spring 86 is placed between enlarged portion 78 and lower guide 82. Thus the trough 20 of brace 18 is supported by side members 22 and 25 which are supported at one of their front ends by the rods 50 and at the rear by the rods 70. The rods 70, in turn are supported by the lower guide 82 by means of the spring 86 and the enlarged portion 78 of the sleeve 75.

Rigidly mounted to the top frame 30 is the canister cover 88. This cover is shown as square, but may be of other configurations when desired. Between the cover 88 and the canister 11 is a gasket 90 which is of a shape and resilience suitable for providing a gas-tight connection between the canister and the cover. Thus, the gasket and the canister generally have a coordinated shape while the flat underside of the cover is suitable for covering any shape canister. The cover 88 is provided with an outlet hole to which outlet duct 93 is connected. This duct may lead by any suitable means, for example, the fittings 96 and 99 and rigid pipe 101 to the filter 103 and pipe 105 which leads to the place of use of the gas generated in the canister, for example, the ventilation system of a submarine. The filter is held within the housing 36 by any suitable means, for example the bolt and nut arrangement 107. The cover 88 is generally provided also with the entry hole 109 for an igniting device. The canister generally is supplied with handles 111 and either the cover, as shown, or the canister may be equipped with the gauge 113.

The device is usually equipped with the chain 115 for support of the canister in the refill or "B" position. The operation and potential of the device is best shown by a situation wherein a candle has finished its oxygen generation and is to be replaced by a candle of a different weight. The lever 55 is raised, lowering the front rods 50 and the front of brace 18. This allows enough clearance at the top of the canister so that loosening the chain 115 and pulling forward a handle 111 allows the rod 15 to fulcrum in the trough 20. Canister 11 may thereby be lowered to the "C" position resting on a handle in which position any debris from the previous candle may be removed. The canister may then be raised to the B or refill position and the chain 115 attached to support the canister in this position. The fresh candle is inserted and, when a lighter candle is used than previously, enlarged portion 78 is rotated to lessen the pressure on the spring 86. The canister is then raised to the upright "A" position and the lever 55 is lowered. The enlarged portion 78 is then turned to adjust the pressure on the spring 86 to insure a tight fit between the canister 11 and the gasket 90. The ignition device is inserted through the hole 109 and the gas generation is begun. It will be seen that an abnormal increase in gas pressure within the canister due, for example, to clogging of the filter 103 with condensed sodium chloride, will relieve itself harmlessly by downward pressure against the resiliently mounted brace 18 to an extent

sufficient for the gas to escape between the canister and the cover, perhaps even giving an audible hiss.

It will thus be seen that the device of this invention provides a gas generator of particularly rugged construction and capable of very easy adjustment to varying weights of charge, as well as rigid mounting to the piping system for the generated gas.

It is claimed:

1. A device for recovering gaseous products which comprises a canister having a bottom and a top, said bottom being mounted on a brace having a front end and a back end, said top of the canister being connectable in gas-tight engagement with a cover rigidly mounted on a rigid frame, said cover having a gas outlet, said brace being pivotally suspended on said rigid frame at one of said ends by resilient support means and at the other of said ends by rigid support means, the resilience of the resilient support means being adjustable.

2. The device of claim 1 in which the said gas outlet has rigid conduit means leading to a filter.

References Cited by the Examiner

UNITED STATES PATENTS

2,983,588 5/61 Bovard ----- 23—281

MORRIS O. WOLK, *Primary Examiner*.

JAMES H. TAYMAN, JR., *Examiner*.